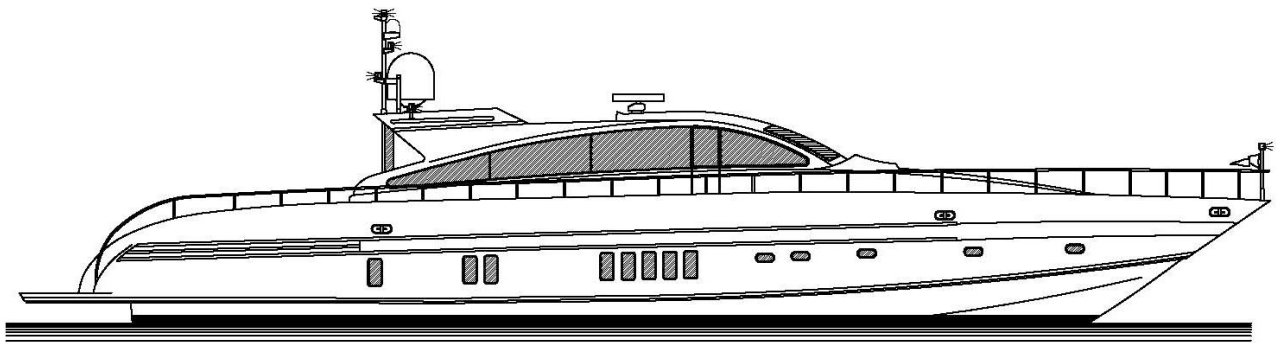


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YACHTS
Technical specification Leopard 27 m

**CONSTRUCTION'S
TECHNICAL SPECIFICATION**



Leopard 27 m

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SECTION 1 – MAIN FEATURES

1.1 The aim of the document

The aim of the document as well as of the attached General Arrangement Plans, is to describe every technical detail concerning the Leopard 27 Luxury Motor yacht, later simply called “yacht”.

The term “Ship owner”, used in this document, stands for “Buyer” in the contract, and it may change its meaning only if requested by the context.

In case of some differences between the contract and the specification, the latter will prevail over the former from the technical point of view.

In case of some differences between this kind of document and the design drawings, the former will take priority.

The term “or” used in the document shows that it is possible to use alternative items, which should be interpreted as “at the master’s option”.

Except for the items indicated by the “Ship owner”, the Shipbuilder will provide all the necessary equipment for the normal operating of the yacht.

The yacht will be built according to the technical specification and to the relative drawings. The Shipbuilder reserves himself the right to introduce changes during the time of construction.

The warranty should be considered in accordance with the yacht contract.

Each unit of measure used in the document belongs to the metric system.

1.2 – Material and labour

1.2.1- Material

All the material, plants and units will be top quality and chosen with the only aim to be used on board.

If the above mentioned material could not be available, the Shipyard will provide other equivalent one.

The standard material supplied by the Shipbuilder could only be used if it is considered to be in accordance with the technical specifications.

1.2.2- Labour

All work to the yacht will be carried out in accordance to the established good boat building practices and will correspond to the high standards, if requested by the Registry of Shipping.

1.3 – Features and description

1.3.1 – Description

The Motor yacht, shown in the General Plans of this specification, is a “pleasure luxury yacht”, of a total length of 27 m.

The hull and superstructure will be made in fibreglass.

The yacht has been designed to show the following features :

- Good seaworthiness
- Maneuverability
- Solidity
- Comfort on board

The interiors will be according to the ergonomic principles in order to get the best comfort during the navigation.

The air conditioning system (later explained) will be adequate to the Mediterranean climate.

The yacht will have some accommodation and the engine room planned to be under the main deck. Further accommodation and the wheelhouse will be located on the upper deck.

The hull will be divided by two water-tight athwart ship bulkheads:

- Collision bulkhead
- Engine room/ Owner’s cabin bulkhead

The way the cabins are located will be according to the attached design drawings , called “General Plan”, except for the changes requested by the Ship owner during the executive drawings’ development.

The yacht will have an engine room , which will be supplied by two MTU 16V 2000 M92 diesel engines, two Arneson ADS 15 with surface propeller all of them certificated by the Registry of Shipping.

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1.3.2 – Main features

1.3.2.a - Dimensions

The yacht will have the following features and dimensions :

▪ Length overall	m	26.78
▪ Length at the waterline	m	21.20
▪ Maximun breadth	m	6.05
▪ Maximum draft	m	1.135
▪ Full load displacement	tons	68

1.3.2.b – Capacity

▪ Fuel capacity	litres	8.000
▪ Fresh water capacity	litres	2.000

1.3.2.c- Speed

▪ Max. Speed at half load	knots	40
▪ Cruising Speed at half load	knots	35

1.3.2.d – Range

▪ Cruising range	miles	350
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1.3.2.e – Main engines and equipment

The yacht will be supplied with two MTU 16V 2000 M92 main engines, each of them characterised by Max. Power: 1630 Kw @ 2450RPM

Two Arneson ASD 15 of the Twin Disk.

Two generators 27Kw 220V 50 Hz and 20Kw 220V 50 Hz

1.3.2.f – General

The yacht will be built in accordance with executive designs, which will define hull lines, propulsion system, external lines, every kind of system and structure.

1.4 – Classification rules

1.4.1- Classification

The yacht will be built according to the Registry of Shipping's inspection and rules. It will have :

1.5 – Drawings

1.5.1 – Drawings

The following drawings will be supplied as the yacht kit :

- General plans with external outline and drawings' plan
- Capacity plan
- Sea water system plan
- Light plan
- Waste water system plan and treatment
- Life buoys plan
- Hydraulic system plan
- Arneson and exhaust gas plan
- Electric system plan
- Ventilation/extraction plan in the engine room and bathrooms

All documents will be written in both languages english and italian, if possible.

1.6 – Trials and tests

1.6.1 – General

All trials and tests will be performed according to the Registry of Shipping, to specifications and to the usual Builder's practice.

1.6.2 – Engine trials

1.6.2.a – Engines

The main diesel engines will have a building test certificate according to the Registry of Shipping's rules.

1.6.2.b – Diesel engines and alternators

Generators will have a building test certificate according to the Registry of Shipping's rules.

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1.6.3 – Sea Trials

Sea trials will be performed at the end of yacht construction and not until all the tests on the machinery has been successfully done.

Sea trials will be carried out by the Builder and the technicians on board be the only authorized by the shipyard.

Official sea trials will be performed according to the specifications and to the program prepared by the Builder, by the technical dept and by the Registry of Shipping. They will be also performed under good weather and good sea conditions. In case of bad conditions, the date of the sea trials could be postponed.

Sea trials will be made of the following tests:

1.6.3.a – Speed measurements

The trial will be carried out under displacement at light load conditions and the speed should be 40 knots at the maximum power.

1.6.3.b – Other trials

Such trials will have the purpose to test the good operating of all the parts.

- Air conditioning plant test
- Generators test
- Fire-fighting system test
- Correction of the compass with relative gyrocompasses
- Radar test
- Communication- radio test
- Intercom test
- Transversal thruster plant test
- Anchor e windlass test

1.7 – Noise level e vibrations

1.7.1 – Vibration and noise

It is necessary to take care to the yacht's design and construction in order to minimize all the vibrations and noises.

The engine foundations will be built by the Builder following the design drawings, not until they have been approved by the engine company. The engine company will supply both technical informations and elastic mounts according to the reduction-gear manufacturer company.

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The Builder reserves himself the right to introduce changes to the chosen system (under his own experience) in order to minimize all the vibrations and noises.

SECTION 2 – THE HULL FORM

2.1 – The hull form

Structures and materials will be according to the design drawings, to the rules amended by the Registry of Shipping.

The hull structure will be longitudinal and transversal with monolithic bottom.

The superstructure and the deck will be made in sandwich.

The yacht will be mainly divided by two bulkheads in three compartments.

The hull will have a 18° medium V form.

Some additional elastic mounts will be installed in order to support the machinery weights. The main engine basements will look like as parts of the structure.

The main deck will have drain scuppers installed in adequate positions, running inside the hull and coming to the surface on the floating line. The material used will be stainless steel/PVC.

2.2 – Structural bulkheads

The yacht will be according to the Registry of Shipping's rules.

The watertight bulkheads are the following:

- Engine room / Ship owner's room
- Collision bulkhead

The other bulkheads are the following:

- Ship owner's room / Guest's cabins
- Guest's cabins /Crew's cabin

The fuel tank, placed symmetrically to the central line, will consist of double bottoms.

The fresh water tank and black and gray tanks will consist of double bottoms.

2.3 – Hull's construction

The yacht will be designed and build according to the Registry of Shipping's rules concerning this kind of boats.

2.3.1 – General

The main structure of the yacht should be built according to the rules usually used by the Builder and by the Registry of Shipping.

Every opening will be perimetrically reinforced and will have a large drain.

Every dimensioning will be according to the Registry of Shipping's rules.

The bottom will be adequately reinforced and hydrodynamically driven in proximity to hawses, sea intakes, submerged gas exhaust.

2.3.2 – Double bottom

The double bottom will be divided, according to the design's capacity plan, in order to contain a necessary quantity of fresh water, fuel and dirty water. No other tank is foreseen. Every filling pipe, sucker, vent hole and sounding-pipe will be installed according to the Registry of Shipping's rules.

Scallops will be made on both the floor and the keelson to permit a good drain through all the tanks and double bottom.

Double bottom will be reached through openings made on the top of the double bottom itself. In that way it can be subjected to every kind of workings and maintenance.

2.3.3 – Chain locker

In the forepeak two chain lockers will be divided by a bulkhead in the centre line in order to permit the chain self stowage.

The chain lockers will contain every kind of regulation size chains. A free access on the top will permit to check and chains unfastening.

Drainage of chain lockers will be directly released into the sea by means of outboard discharges, protected by stainless steel para sprinkling casings.

2.3.4 – Decks

The main deck will be made in fibreglass. Additional bearings will be installed around the openings and near the winches and warps. The fore deck will be protected by the bulwark and will be flat.

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The deck will have bolts (transversal/longitudinal) in both the open-air areas and lateral passages.

2.3.5 – The superstructure

The superstructure will be made in fibreglass. The relative calculations will be done according to the Registry of Shipping's rules.

The inlet and outlet ducts of the air from of the engine room will be in the quarter side. Ventilation ducts in the engine room will be provided with fire rolling shutters , as required by the Registry of Shipping.

2.3.6 – Miscellaneous

2.3.6.a – Bulwark

There will a fibreglass gunnels around the main bridge which will be adequately strengthened with stanchions and aluminium or inox stainless steel handrails.

On the bulwark there will be freeing ports in adequate numbers and dimensions, as requested by the Registry of Shipping.

2.3.6.b – Exhaust gas of the main engines

The exhaust gas ducts will directly release under the hull. The wet part of them will be made of fibreglass and the dry pipe in stainless steel.

2.3.6.c – Hawses

The hawses will be made in AISI 316 stainless steel and they will be used to contain the anchor shank.

Anchors will be contained inside the fore hull surface flush to the hull. Stainless steel rods and plates will protect the hull's fibreglass.

A good anchor washing system will be installed.

SECTION 3 – WOODEN WORK

3.1 – Weather decks

The open-air areas will be covered by teak (10 mm thick internal and 14 mm external) which will be glued to the deck through an insulating compound. Between a plank and the following one will be used Sicaflex (or similar).

After the teak has been glued on the weather deck , it will be sandpapered.

3.2 – Handrail

The stainless steel AISI 316 handrails will be placed where necessary.

SECTION 4 – PAINTING AND CATHODIC PROTECTION

4.1 – Painting

The Ship owner will choose the finishing colours of his own yacht.

4.1.1 – Quick works- painting

Antifouling painting (Teflon)

4.1.2 - Upper works- painting

- Waterline
- Beauty lines

4.1.3 – Inside hull and bilge painting

Gelcoat (SDM 044)

4.1.4 – Fresh water tank

Fresh water tank are built in the double bottom and treated with alimentary gelcoat.

4.1.5 – Waste water tank

There will be a single tank for both black and grey water.

4.1.6 – Forepeak and chain lockers

Gelcoat (SDM 044)

4.1.7 – Mast and other visible parts

- Sanded
- Epoxy primer
- Epoxy filler
- Bi- component primer

4.1.1 bis

In option awll grip in blue or equivalen painting for the hull and white or metallic gray for the superstructure. (extra cost)

4.2 – Cathodic protection

There will be used zinc anodes to protect all the appendixes:

- Manoeuvring propeller appendix
- Arnerson equipment appendix
- Hull appendix

SECTION 5 – EQUIPMENT AND SUPPLIES

5.1 – Winches and capstains

The following deck equipment will be installed on board.

5.1.1 – Windlass

There will be installed two windlass (Sanguineti or similar) having a Barbotin wheel built according to the link length and the chain's diameter including warp rolls.

The windlass should be able to pay out and to weigh anchor according to the Registry of Shipping's rules.

The windlass will be driven by a 2 KW 24V electric engine.

The warp rolls and the hand wheels will be chromium-plated . Windlasses will be provided with a deck button control.

5.1.2 – Capstains

Two capstains with an adequate diameter will be supplied and installed on the aft upper deck both at port and starboard.

The passage deck flange and warp roll will be laid out on an appropriate basement. The engine with its relative gears will be installed under the deck.

Warps will be driven by a 1 KW 24V, and they will be in accordance with the Registry of Shipping's rules.

The exposed areas on the deck will be made in aluminium. The push-button controls will be on the deck.

5.2 – Anchorage and mooring

5.2.1 – Anchors

Anchors will be made in galvanized steel with high holding power. They will be balanced and will weigh 75 Kg each.

They will be approved by the Registry of Shipping.

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5.2.2 – Chains

Two chains , 100 m long each, will be supplied. They will be made of warm galvanized steel, at the 2nd degree and will have a 10 mm diameter. Chains' dimensions will be according to the Registry of Shipping.

5.2.3 –Mooring ropes

The Shipyard will supply two Nylon mooring ropes, having a 26 mm diameter and 15 meters long.

Every rope will have a steel spliced thimble, a stainless steel chain (2 metres long/10 mm diameter) with clevis.

There will be also supplied a Nylon tow-rope (26mm diameter) 100 meters long. Anyway, the rope equipment will be the one requested by the Registry of Shipping.

5.2.4 – Bitts and fairleads

The Shipyard will supply traditional aluminium/stainless steel bitts for the yacht mooring. Their number and dimensions will be established by the mooring plan.

Fairleads will be made in stainless steel.

5.2.5 – Fenders

There will be supplied inflatable fenders made of plastic material with Nylon ropes in order to protect the hull all along the yacht's sides.

5.2.6 - Hooks

Two boat hooks with stainless steel ends will be supply. They will be secured with a clip all along the bulwark.

5.2.7 – Hatch

The entrance hatch to the garage will be provided with an hydraulic system.

5.3 – Driving gears and bow-thruster

Wheel house will be on the main deck and will include the main engine's equipment, their control levers and the ones of the bow thruster.

5.3.1 – Bow-thruster

There will be installed a fore hydraulic bow-thruster.

5.4 – Masts

In an adequate position a light alloy mast will be built. The mast will be used as the bearing for the radar, the antenna, the lights, the flags and for other possible accessories.

There will be also installed a flagstaff on both fore and aft.

5.5 – Doors

5.5.1 – Doors exposed to the weather

The doors will be weather tight and will work through a central lever or by means of an AISI 316 L polished stainless steel hand wheel. The doors will be according to the Registry of Shipping's rules.

The aft door will be electric.

5.6 – Ladders

5.6.1 – Inside ladders

The inside ladders will have an appropriate shape and size. Their number and their position are shown in the General Arrangement Plans.

5.6.2 – Outside ladders

The two ladders leading to the aft platform will be made of fibreglass and teak planked . Lights will be set on every step of the ladders.

5.6.3 – Ladders leading into the Crew's cabins

The ladders leading into the forepeak, to the Crew's cabins and to all the emergency exits will be vertical light alloy ladders.

5.7 – Windows, portholes and doors

The number of windows and portholes will be taken from the General Arrangement Plans.

Owner's spaces will have rectangular portholes 300x600 mm large, placed vertically. The other spaces will have oval portholes, placed horizontally, 200x400mm large. The windows will have AISI 316L stainless steel frame.

The glasses type will be the one approved by the Registry of Shipping.

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Windscreen-wipers will be installed then approved by the Registry of Shipping.

Portholes and doors will be the ones described in the General Arrangement Plans and then approved by the Registry of Shipping.

5.8 – Hatch and hatchway

5.8.1 – Hatches on the main deck

There will be watertight hatches having a normal size. Exits will be provided with a water tight hatch flush to the deck and they will be covered by teak.

5.8.2 – Access to the tanks

Every tank will have watertight manhole with a steel cap. They will be built and laid out according to the Registry of Shipping's rules.

5.8.3 – Engine room's hatches

On the main deck there will be two appropriate hatch used for the engine's embarking. The opening will be made according to the Registry of Shipping's rules.

Two hatches will lead to the engine room with vertical light alloy ladders.

5.9 – Gangway/ Crane

A standard Leopard gangway-crane will come out from the aft hatch on the transom. It will be a standard Leopard gangway .

5.10 – Name-plates

All the plates will be written in english.

SEZIONE 6- ACCOMMODATION

6.1 – General

The accommodation will be according to the General Arrangement Plans.

The accommodation's and furniture's drawing will be prepared by technical dept and by the Builder. Anyway, they will follow the specification's rules and the General Arrangement Plan's lines.

Every kind of material used for the furniture will be approved by the Ship owner.

Every room will be designed and built to assure the best comfort. Crew's cabins will be designed according to the habitability standard meant for this kind of yacht.

6.2 – Description of the yacht's cabins

6.2.1 – Lower deck cabins

- Garage for tender
- Engine room
- Ship owner's bathroom with shower
- Ship owner's bedroom
- Dinette area
- Guest's cabin with shower bathroom and double bed
- Guest's bathroom with shower
- Guest's cabin with two single beds
- Galley
- Crew accommodation
- Chain locker and forepeak

6.2.3 – Main deck

- Conversation open-air aft area with a central sun-suits and sofas
- Living area with sofas (access from aft), with fridge , ice-maker and sink
- Dinner area with table and furniture
- Wheelhouse with three armchairs

6.3 – Description of the materials used for the furnishing

6.3.1 – Ship owner's and Guest's cabins

Bulkheads finishings in wood essences, lacquerings, leather or fabrics
Marine plywood furniture with finishing in wood essences, lacquerings, leather or fabrics
Wood ceilings realized in marine plywood panels with leather or lacquer-finishing
Floor finishings in carpet or wood essences
Ceiling spot-lights and decorative lamps
Wood blind or fabric curtains for windows and portholes
Antiglare blinds for portholes in cabins

6.3.2 – Ship owner's and Guest's bathroom

Bulkheads finishings in wood essences, lacquerings, leather or fabrics
Wood ceilings realized in marine plywood panels with leather or lacquer-finishing
Floor finishings in wood essences, marble, Corian or similar.
Ceiling spot-lights and decorative lamps
Marine plywood furniture with finishing in wood essences, lacquerings, marble, Corian or similar
Sinks in ceramics, marble, inox
Medicine cabinets and marine plywood furniture with finishing in wood essences, lacquerings, marble or similar, mirror, glass
Nautical sanitaryware
Shower plate in teak, marble, Corian or similar, shower walls/plate in mosaics
Wood or aluminium blinds for portholes

6.3.3 – Crew's cabins

Bulkheads finishings in wood essences, lacquerings
Wood ceilings built in marine plywood panels with leather or lacquer-finishing
Ceiling spot-lights
Floor finishings in Ceramiflex, fire proof plastic materials
Custom mattresses, bed sheets and pillows
Wood blinds or fabric curtains for portholes

6.3.4 – Galley

Bulkheads finishings in wood essences, lacquerings
Kitchen appliances: double sink, electrical cook-tops, air-heating oven, microwave oven, refrigerator and freezer according to the General Arrangement Plan
Wood ceilings realized in marine plywood panels with lacquer-finishing
Floor finishings in Ceramiflex, fire proof plastic materials
Worktops in Corian or similar
Ceiling and under-cabinet spot-lights

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6.3.5 – Main saloon and dinner area

Bulkheads finishings in wood essences, lacquerings, leather or fabrics

Wood ceilings realized in marine plywood panels with leather or lacquer-finishing

Floor finishings in moquette or wood essences

Leather-covered sofas and poufs, coffee tables, dinner tables, loose and custom made wood furniture in wood essences, with fabric or *leather coverings* according to General Plan Arrangement

Ceiling spot-lights and decorative lamps

Wood blinds or fabric curtains for windows

6.3.6 – Wheelhouse and sitting room/ladders area

Bulkheads finishings in wood essences, lacquerings, leather or fabrics

Wood ceilings built in marine plywood panels with leather or lacquer-finishing

Floor finishings in carpet or wood essences

Ceiling spot-lights and decorative lamps

Leather-covered dashboard: engine display, navigating electronic instruments, computer, electric panels.

Leather-covered pilot-seats or sofa

Wood furniture (desk, work tops, cabinets, etc.) in wood essences, lacquer-finishing

Every material such as carpet, curtains and all the internal upholstery will be chosen by the ship-owner from a sample collection.

External furniture coverings and curtains will be made of water-repellent material.

6.4 – Bathroom equipment

Best quality sanitaryware

Mirrors and enlarging mirrors on request

Bathrooms will be supplied with all the necessary accessories such as towel rails, soap dish, and razor taps.

Nautical wc Tecma type will be installed in all bathrooms

6.5 – Store equipment

Every peak and all the free areas used as a store will be equipped with cupboards and shelves.

6.6 – Thermo-acoustic isolation

6.6.1 – Engine room's sound-proofing

The fore bulkhead, the ceiling and the hull's sides will be thermally insulated and sound-proofed.

6.6.2 – Hull's and superstructure's sound-proofing

Every compartmentation bulkhead will be made in marine plywood.

6.6.3 – Thermic isolation in the engine room

The thermic insulation will be in compliance with the Registry of Shipping.

SECTION 7 – HULL'S PIPING SYSTEM

7.1 – General

The hull's piping system will be metallic one and will be designed to contain the load loss and the corrosion. It will also be adequately stiffened up and protected.

The hull's piping system will have, if possible, the less number of curves. As possible if necessary, joint elements (Straub type) will be used.

The bending radius of the pipes, except for particular cases, will be once and a half bigger than the diameter itself. The thickness will be the one required by the Registry of Shipping. All the sea water system will be made in Cu Ni.

The vent-holes from the fuel tanks will be made in copper or inox.

All the pipes will be tested ashore and on board after the fitting up according to the Registry of Shipping's rules.

The Shipyard will take particularly care to the pipes mechanic insulation in order to contain the diffusion of noise and vibrations.

7.2 – Fire fighting equipment

7.2.1 – Pumps

An electro-pump for the fire-fighting system (ACB 431 B 24V 1,5 KW G&R or similar) and the bilge will be installed.

7.2.2 – Fire fighting system

The fire fighting system will be connected to the bilge system (which will be used as a reserve) and then made autonomous with the interposition of valves.

The water sea fire fighting system will have two fire fighting points located on the exposed deck with UNI 45 complete with hoses (20 m each), variable jet nose pipe and an hydrant in the engine room (UNI25).

The pipes will be made in Cu Ni complete with flanges and/or joints, bronze nuts and adequate packing.

The self-priming pump will be made in bronze.

The valves and/or the rolling shutters will be made in bronze with brass interiors; the ones located in external visible areas will be made of stainless steel or chromate brass.

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The system will be also used for the chain washing by means of a valve and at least two delivering nozzles for every hawse.

Anyway, the system will be in compliance and under the survey of the Registry of Shipping.

7.2.3 – Primary fire fighting system

It will be necessary to protect the engine room and to start the self locking of ventilation's flam trap- rolling shutters, fuel-taking valves and the electro-ventilation stop. Fire fighting bottles will be located in the garage. The driving control of the fire fighting system will be installed on the main deck in the aft.

The pipes will be made in steel with steel joints and adequate packings. Copper pipe and appropriate joints will be used for the emergency locking.

All the plants will be carried out according to the Registry of Shipping.

7.2.4 – Fire fighting portable equipment

The capacity and the number of CO2 and powder extinguishers will be according to the Registry of Shipping's rules.

The yacht will be also protected against the fire from a thermo/smoke sensor system. Sensors will be located in the engine room and in every other yacht's room. They will be connected to a main alarm panel located on the wheelhouse computer.

7.3 – Bilge system

7.3.1 – Pumps

A mono-phase electric pump for the bilge system (ACB 431 220V 2,2 Kw G&R or similar) and for the fire fighting reserve will be installed.

An hand-pump will be supplied for the emergency bilge pump having an adequate capacity.

7.3.2 – System

Through an appropriate intervention on the separating valves, the two systems (bilge and fire) could be used alternatively for both services. Normally a service will be started for the bilge and the other one for the fire fighting.

The pumps will be connected to a valve's group for a separate discharge of all the compartments.

The pipes will be made of Cu with bronze nuts and adequate packing.

Elastic mounts heels and flexible joints will be installed respectively on the bases and on the pipe connections.

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The self-priming pump will be made of bronze.

The valves and/or rolling shutters will be made of bronze with brass interiors. The ones located in external visible areas will be made of stainless steel or of brass chromate.

The system will be carried out according to the Registry of Shipping's rules.

7.4 – Sounding-line pipes, air vent and water/fuel intakes

7.4.1 – Air venting

Every tank and double bottom will be provided with air vent pipe. The system will be built as shown in the General Arrangement Plans approved by the Registry of Shipping.

The pipe material will be made of CuNi or different material according to the service. The thickness will be the standard one.

7.4.2 – Sounding-lines and levels

Every tank and double bottom will be provided with sounding-line pipes according to the Registry of Shipping's rules.

On the fuel tank, levels with a digital read-out will be installed. They will be the same of the ones on the fresh water tank.

7.4.3 – Fuel inlet

A fuel intake system will be installed on port and starboard side on the main deck.

The pipe material will be CuNi.

7.4.4 – Fresh water inlet

A fresh water intake system will be installed on port side on the main deck.

The pipe material will be stainless steel.

7.5 – Cold/hot fresh water system

7.5.1 – Water tank

Water will be contained in the double bottom located on the fore of the fuel tank and in a safest area. It will have the capacity of about 2000 litres.

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7.5.2 – Cold washing water system

A G&R type system (or similar) will be installed in the engine room, where it will be able to keep pressure almost steady. It will be made of one JET 4 BC 24V 0.75 KW and one JET 4 BC 220V 0.75 KW pumps. A desalter system will be installed having the capacity of 180 litres per hour production (MC3J Idromar or similar). A system including purification and disinfection filters of the sea water will be installed.

The pumps will suck the water from the tank and will supply to the using system.

The pipes in the engine room will be made in stainless steel AISI 316 stainless steel with adequate pipe-fittings and joints. Outside the engine room plastic material and adequate pipe-fittings will be used.

Pumps will be made of bronze. The pre-assembled kit will provide the self-intervention of a pump over the other one.

The valves and/or the rolling shutters will be made of stainless steel.

Elastic mounts heels and flexible joints will be installed respectively on the pipe bases and heels.

All the system will be carried out according to the Registry of Shipping's rules.

The washing system will have a fore and an aft connection with appropriate hoses.

7.5.3 – Hot water system

Two boilers Gianneschi, 80 litres each, will be installed.

A shower mixer with scuttle-hole will be installed in the platform area. The position and the number of it will be chosen by the Shipyard.

The valves and/or the rolling shutters will be made of stainless steel.

All the system will be according to the Registry of Shipping's rules.

7.6 – Scupper plant

7.6.1 – Scuppers

All the decks exposed to the atmospherics will be provided with an adequate number of scuppers. Pipes will be straight as possible and will have a capable recess with polished grille visible on the deck.

Scuppers will discharge outboard by means of a Para sprinkling protection.

All the system will be according to the Registry of Shipping's rules.

7.7 – The sanitary system

7.7.1 – Gray water

Gray water will be gathered into adequate tank to be discharged outboard to the sea.

Pipe material and all the connections will be made of PVC.

All the system will be according to the Registry of Shipping's rules.

7.7.2 – Black water

Black water will be gathered through the Tecma system into an adequate box from there a pump allow to discharge outboard to the sea or to the shore.

An international flange for the shore releasing will be installed in the garage.

Pipe material, valves and all the connections outside the engine room will be made in PVC and in stainless steel inside.

Pipes should be straight as possible and the deviations and branches (derivations) will be carried out according to the technical Builder's specifications. Cleaning and inspection caps will be put onto the tank to be reached.

All the system will be according to the Registry of Shipping's rules.

7.8 – Fuel depuration system

7.8.1 – Fuel tank

The yacht will be provided with two structural tanks built in the double bottom. The storage tank will have a capacity of about 6800 litres. The daily tank will have a capacity of about 1200 litres.

Pipes will be made of Cu-Ni with Straub joins.

All the system will be built according to the Registry of Shipping's rules.

7.8.2 – Fuel filtering and transfer system

A transfer system with two electro pumps will be installed. The electro pump will have a capacity of about three cubic metre per hour.

The system will consist in a metallic net filter which will be used to separate the impurities. A series of Separ filters will clean the fuel before it flows into the daily tank. Engines and generators will suck the fuel from the daily tank through the manifold with valves. Stopping valves will be installed between the daily tank and the manifold.

Pipes will be made in Cu Ni; there will be joints (Straub type) and/or connections.

Flexible joints will be installed between pipes and units.

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For the sections less than DN 15, copper pipes and adequate connections will be used.

Where possible, all the units connected to pipes will have dripping plates. All the system will be according to the Registry of Shipping's rules.

7.9 – Insulation of the pipes

All the surfaces of hot water pipes and the refrigerators gas will be isolated with adequate materials. It is necessary to take care to the sealing of connections, clamps, passages to the deck and to the bulkhead.

SECTION 8 – VENTILATION AND AIR-CONDITIONING

8.1 – General

All the interior rooms, including the wheelhouse, will be air-conditioned. The air-conditioning will be adequate to the Mediterranean climate.

8.2 – Air-conditioning system

The Shipyard will supply a water circulation system, where water will be thermically treated.

The compressor group cools or warms a water- glycol mixture which will be sent to the fan-coils through electro circulation pumps and a closed pipe system (adequately isolated).

The cooling of the warm condensor pump is carried out with the forced sea water circulation. In the fan-coils, a water/air exchanger associated to a centrifugal fan cools and warms the rooms, according to the season or to the Owner's preferences.

The fan-coil during the summer reduces the quantity of the air humidity in the rooms: the excess humidity condenses on the exchanger surface and, gathered into a drain basement, it will be successively released.

The control method of temperature in all the rooms consists in the introduction or the cyclic switching off of the fan inside the fan-coil. The treated water continuously flows into the exchanger, while an adjustable room thermostat controls the operating or the stopping of the fan in order to keep temperature steady.

The adjustable room thermostat allows the individual and differentiated check of temperature in every single room.

It is possible both to settle a range between the room temperature and the selected temperature and to manage the quantity of air introduced into the room varying the in taking speed.

The system is provided with electro automatic room thermostats, air in taking and outlet grilles, pre-blown expansion vase etc...

8.3 – Air-conditioning equipment

The air-conditioning system located in the engine room and supplied by the Frigomar (or similar) will made of two sequential compressors, 60.000 BTU/h each, 120.000 total BTU/h, circulation pumps for warmed/cooled water, sea water circulation pumps, fan-coil of various

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size. The system design will be carried out by the manufacturer who will provide it with all the guarantees under suggested thermal conditions.

8.4 – Mechanic ventilation

The dimensions of the duct for the air inlet and outlet, for the diffusions and for the retaking grilles will be estimated in order to reach an air speed not max 10 metres per second for the ducts and 6 metres per second for the grilles and the diffusions.

In case of emergency, it will be possible to stop the ventilation of all the system from both the wheelhouse and the fire fighting system's central box.

8.5 – Natural ventilation

Natural air intakes will be installed in all the peaks or the rooms used as storage.

8.6 – Engine room and tender garage ventilation

8.6.1 – Ventilation and extraction in the engine room

Two fans and two extractors will be installed on both side in the engine room. They will have flam trap-rolling shutters located on the bulwarks. External air inlet grilles with Para sprinkling filters will be adequately positioned over the main deck gun whale.

The system will be suitable for the heat dissipation in the engine room, for the supply of the necessary air to be used by the engines and spare parts. For a good engine maintenance, the inside temperature will be the one suggested from the supplier. The Shipyard will provide helicoidally fans. Shock absorbers will be set between ducts and engines.

All the system will be according to the Registry of Shipping's rules.

SECTION 9 – EQUIPMENT

9.1 – Navigation, communication and safety equipment

9.1.1 – Navigation and communication equipment

The yacht will be supplied with the following equipment located on the main control panel.

- Speedometer
- Autopilot
- Two Plotter/DGPS
- Coloured radar
- VHF/DSC
- Coloured depth sounder
- Magnetic compass
- SSB (EXTRA)
- Gyrocompass
- Wind indicator system
- Station vent
- AIS class B transponder type 50
- Epirb + sarr (EXTRA)
- Navtex B (EXTRA)
- Domcomplete 33 radome complet satcom
- Autocom (EXTRA)
- Telephone
- Tracvision
- External camera (engine room, deck , outside) with alarm system (EXTRA)

9.1.2 – Safety equipments

The yacht will be provided with the following security equipment , homologated and certificated by the Registry of Shipping.

- A full kit of navigating lights
- Search light
- A full kit of flags
- Set inflating life rafts
- Life jackets
- Life buoys with light

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- Portable powder extinguishers and CO2 placed according to the Registry of Shipping's rules
- Hand flares and signal rockets
- Shipboard medical kit

9.2 – Radio Tv system

Radio/music system. Music will be spread all over the yacht through high quality equipment located in the Owner's room, in the Guests' rooms and in the galley. The Crew's cabin will be supplied with a Sony Car system. The main saloon will have stereo system spreading into aft. The stereo system will be located in the main saloon and the sound will be spread over the fore sunbathing area by means of speakers.

TV system. A full Tv system will be supplied in the : saloon, Ship owner's room, Vip room, Guests' rooms and in the galley. A satellite TV antenna with decoder (EXTRA) will be installed in the saloon and in the Ship owner's room. Crew's cabins will be also provided with Tv system (EXTRA).

9.3 – Communication system

Telephone system. The yacht will be equipped with a telephone switchboard to manage the inside/outside phone lines from ashore, the satellite and GSM.

Intercom system. It allows the communication with every room in the yacht. Communication is guaranteed through the phone switchboard , smentioned above.

Manoeuvring intercom system. This equipment allows the Ship-owner, standing on the bridge , to easily communicate to the fore deck, the aft deck and the engine room (thank to headphones and to an appropriate intercom).

9.4 – Alarm system

9.4.1 – Navigation lights alarm system

A switchboard allows the control over all the navigation lights and starts automatically buzzing whenever lights, the phone line and the switches get out of order.

9.4.2 – Bilge alarm system

All the bilges are monitored by sensors connected to a switchboard in the wheelhouse. They will signal the room where the high level has been reached.

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An other control system will inform about the compartment where portholes have been left opened during the navigation. A warning will appear on the board computer.

9.4.3 – Fire alarm system

In every room there will be installed fire fighting sensors connected to the board computer in the wheelhouse. It will show the area or the room with the presence of smoke or fire.

9.4.4 – Anti-intrusion and anti-theft system

A closed circuit TV system will be installed with a monitor in the wheelhouse and in the galley. It will also have cameras placed in the engine room and on the aft.

9.4.5 – Monitoring system (EXTRA)

The system is installed on the bridge and when necessary allows to control and manage :

- Battery insertion
- Shore power connection
- Generators ON/OFF
- Charging for service batteries and electric starting batteries
- Fuel tank level, black and grey water level, fresh water level
- Navigation light status
- Aft shell door and porthole status
- Status of the emergency bilge pumps
- Engine room ventilation
- Fire fighting and smoke alarm supervision
- Switching on/off of the air conditioning system

In general, the board computer manages all the points, listed above, and in case of alarm it automatically shows the relative page in order to make the intervention easier and to better explain the cause of the alarm.

9.4.7 – Wheelhouse instrument panel

On the appropriate instrument panel, made of fibreglass, the following items will be installed, in addition to what has been listed above :

- Two MTU engine speed indicators
- Helm angle indicator
- MTU engine display (supplied by MTU)
- Power and reversing controls (mono-level)
- Horn push-button
- Bow-thruster control
- Nocturnal navigating lights
- CCTV

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- Monitoring system (EXTRA)
- Manoeuvring intercom
- All the electronic navigating + instruments (radar, GPS, etc.)

SECTION 10 – ENGINES AND PROPULSION

10.1 – General

The yacht will have two sets, including diesel engines and reduction gears. A cardan shaft will be placed between reducers and Arneson Surface Drive units.

Two generators.

The main engines and generators will be fed by the same fuel type.

10.2 – Main engines

The engine system will be made by two MTU 16 V 2000 M92 engines, having the power of 1630 KW (2450 RPM). The engines will guarantee the maximum speed of 40 knots. The engine system will be provided with a monitoring system supplied by MTU.

10.3 – Reduction gears

Reduction gears (ZF3060 type) will be directly installed by MTU and assembled to the main engine. The two engines will have reduction gears with reduction ratio 1:2.037

10.4 – Twin Disk propulsors

The propulsion system will be made by two surface drive:

- Two Arneson type ASD 15
- Two surface propellers with 5 blade

10.5 – Additional generators

The yacht will be provided with two electric Kohler generators(27 Kw 220V and 20 Kw 220V). Generators will be placed in the sound-proof boxes and fixed through elastic mounts to rigid structure.

10.6 – Gas outlet of the main engines and generators

10.6.1 – Gas outlet of the main engines

Axial and radial expansion joints will be directly installed on the engines. They will be made of stainless steel and will be highly flexible.

Further couplings will be placed before the Raiser. These units will allow the appropriate expansions on the exhaust lines.

A combined system made by shock absorbers will be installed on the gas exhaust lines. They will avoid vibrations and the heat propagation all over the yacht.

Raiser will be placed on the lines before the outlet under the hull. By-pass pipes intercepted and cooled will be built from the main ducts in order to discharge outboard in the floating line area. Fiberglass pipes under water will be placed towards aft and slightly inclined to the sides.

Pipes will be made by stainless steel sheet to reduce the weight.

Gas exhaust lines will be protected by specific baked clay lining and by steel for the thermic reduction.

Anyway, all the exhaust system will be according to the Shipyard's specification and to Registry of Shipping's rules.

10.6.2 – Generators gas exhaust

The generators gas exhaust pipe will be connected to the main engines by pass.

Two water gas separator system will be fitted.

Anyway all the gas exhaust system will be according to the Shipyard's specification and to the Registry of Shipping's rules.

10.7 – Main engines's and generator's cooling

10.7.1 – Sea intakes

Two sea intakes will be installed in an appropriate position on the hull's keel. From them they will suck up the different pumps.

Mud tanks will be provided with large net copper filters, 2 mm thick.

Cooling system of circulating sea water will be in accordance with the manufacturing company and will be used by all the refrigerators, heating exchangers, raisers and gas outlet by-pass.

Pipes will be made of copper, couplings will have flanges or Straub connections, valves or rolling shutters and adequate packings. Flexible joints will be set between rigid pipes and pumps.

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Anyway, all the cooling and circulating system of sea water will be according to the Shipyard's specification and with the Registry of Shipping's rules.

10.8 – Outboard valves

All the outboard valves will be installed on the hull and will be approved by the Registry of Shipping.

10.9 – Workshop

A bench with drawers and a vice will be installed in the engine room.

10.10 – Dunnage

It will be made of plywood panels in order to avoid noise caused by vibrations. Panels ,easily demountable, will be installed in proximity of valves or similar for a simple manoeuvring.

Ladder steps: ladders to the engine room will be made of light alloy, with anti-sliding steps.

SECTION 11 – ELECTRIC SYSTEM

11.1 – Electric generators and batteries

The motor yacht will be provided with an electric system having a monophasic voltage of 220V. It will be fed by two groups, type 27Kw Kohler and 20Kw Kohler. In addition, an emergency system with 24V batteries will be supplied in order to guarantee the good working of all the main systems and board emergency lights (such as exits indicators, engine room, wheelhouse and radio..). Everything is defined by the Registry of Shipping.

Engines and generators will be fixed through elastic mounts to fibreglass basement.

11.1.1 – Battery groups

- A 24V battery group for the radio communication system
- Two 24V lead battery group for the main engines
- Two battery groups for MTU electronic system
- A 12V battery group for the generators starting
- A 24V battery group for the services

The motor yacht can be feed by a 220V shore power connection located in the aft.

The shore power frequency converter will be fitted (ASEA, ATLAS) (EXTRA).

11.2 – Main electric switchboard

The main electric switchboard will be built according to the Registry of Shipping's rules; anyway, following the technological progress. The main electric panel will be installed in the engine room and will be made up of two sections.

First section :

- Generators (220 V) mono phase
- 220V units
- ashore intakes

Second section:

- 24 V lights and units

The electric panel will include all the instruments, hand controls of the board equipment.

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On the bridge there will be controls from the board computer management.

Everything will be driven by relais located in the engine room panel. It will also contain the protection for all the distribution lines to the units and to the subpanels.

By the use of an overloading alarm system , all the power will be spread avoiding any risks or damages on the machinery and units.

11.3 – Miscellanea

On the bridge all the electric system, equipment, alarms will be managed by a board computer.

The computer automatically shows the alarm page and then shows the starting of every unit together with its relative page.

A rectifying system allows to recharge battery groups and in the meantime feed the units during the recharge time. Finally, power will be spread over all the units from the electric panel through adequate switchboards. They will be provided with a protection against overload and short circuit.

SECTION 12 – OWNER’S SUPPLY

12.1 – Owner’s supply

Jet-ski.

Water sports equipment.

Gym and Fitness equipment.

Diving bottles with Scuba accessories and swimming equipment.

Pots, pans and cooking utensils.

Bone china crockery.

Cutlery and serving pieces.

Table accessories.

Table linens.

Bed linens, blankets and pillows.

Decorative pillows.

Rugs.

Towel and robes.

Stationary.

Guest booklets.

Decorative items.

Artworks and paintings.

Uniforms.

Charts, pilots, almanacs, chart table equipment etc.

Oil pollution clean up kit.

Required log books.

SOLAS manuals.

Safe Manning Document.

Required medical stores.

Required nautical books and publications.

Special decoration.

12.2 – Exterior outfitting

Tender (williams idrojet 325 or similar)

Sun umbrella.

Under water lights.

Anchor in stainless steel AISI 316. (EXTRA)

Painted Hull, see 4.1.1 bis. (EXTRA)

Foldable cleats and lifting equipment on swim platform for securing Jet-ski. (EXTRA)

Stainless steel name on the aft door (back light on sides only). (EXTRA)

wireless door bell.

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12.3 – Interior outfitting

remote controls additional. (EXTRA)

Stainless steel signs (EXTRA)

Shore connection plug (EXTRA)

Service bell audible & visible in galley

UPS for the main engines controls

Ice makers plumbed direct to main water tank

Ice maker

Fridge bar

Safe box in Owner cabin

Safe box in all guest cabins (EXTRA)

Showers walls & floor in marble each shower

Sink in engine room (EXTRA)

Trash compactor in galley (EXTRA)

Washing machine + dryer (Miele)

Wine cellar (EXTRA)

Fridge in the galley (frigomar 90 inox) (EXTRA)

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Worktops galley in marble.

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SECTION 13 – GENERAL PLAN

13.1 – General

The General Plans of the decks and the outside area will be included in this document.